Mission

Research: Conduct frontier, world-class research in Earth, space and planetary science.

Curation: NASA's repository of extraterrestrial samples.

Mission Science: Carry out scientific investigations on NASA missions.

Mission Support: Give authoritative science and technology support to NASA and worldwide programs.

Communication: Communicate NASA science to professional peers, to educators, and to the public.

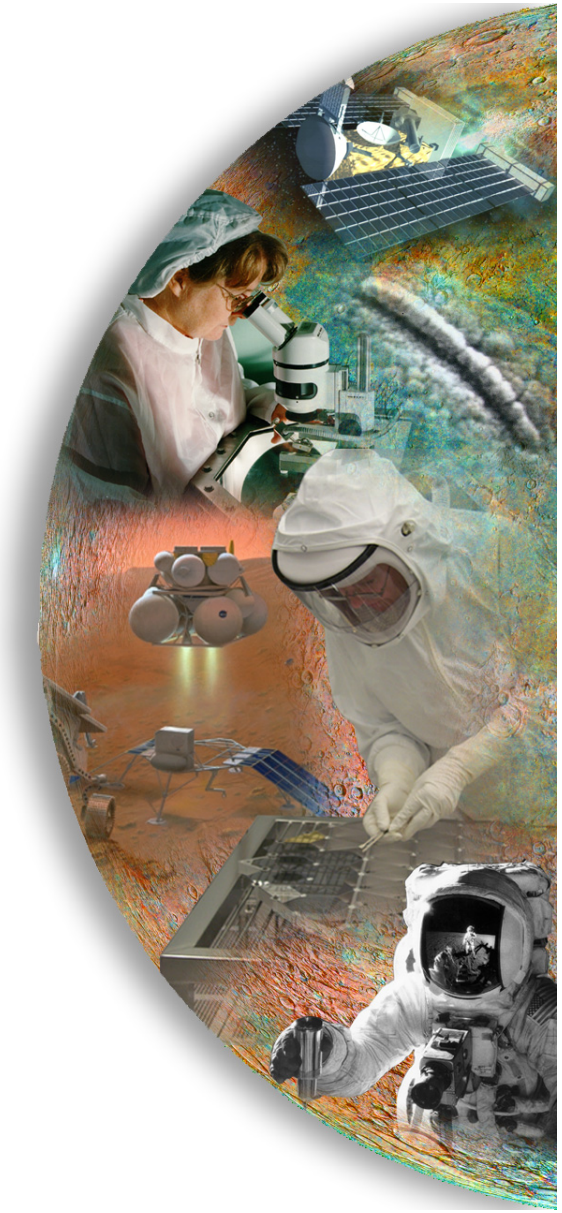
We shall not cease from exploration, and the end of all our exploring will be to arrive where we started.... and know the place for the first time.

~ T. S. Eliot ~

Astromaterials Research and Exploration Science Office (ARES)

Visit our website: ares.jsc.nasa.gov

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058



ARES
Astromaterials Research & Exploration Science

Astromaterials Research

Planetary Evolution

Understanding the origin and evolution of our solar system.

- Accretion
- Planetary Differentiation
- Volcanism
- Impact

Astrobiology

Investigating the origin and evolution of life in our solar system.

- Search for evidence of biomarkers in meteorites from Mars
- Documentation of terrestrial biomarkers

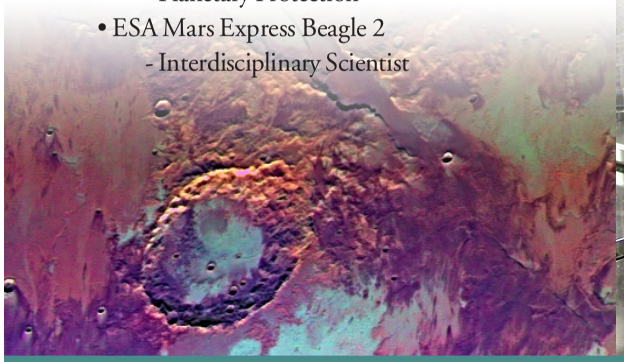
Mars Soil Genesis

Mineralogy, chemistry, and origin of martian soil

- Sample and remote-sensing based
- Multi-institutional/multi-disciplinary consortium

Mission Collaboration

- Mars Surveyor Program
  - Science Teams for '01, '03, '05, '07
  - Planetary Protection
- ESA Mars Express Beagle 2
  - Interdisciplinary Scientist



Astromaterials Acquisition and Curation

Current Collections

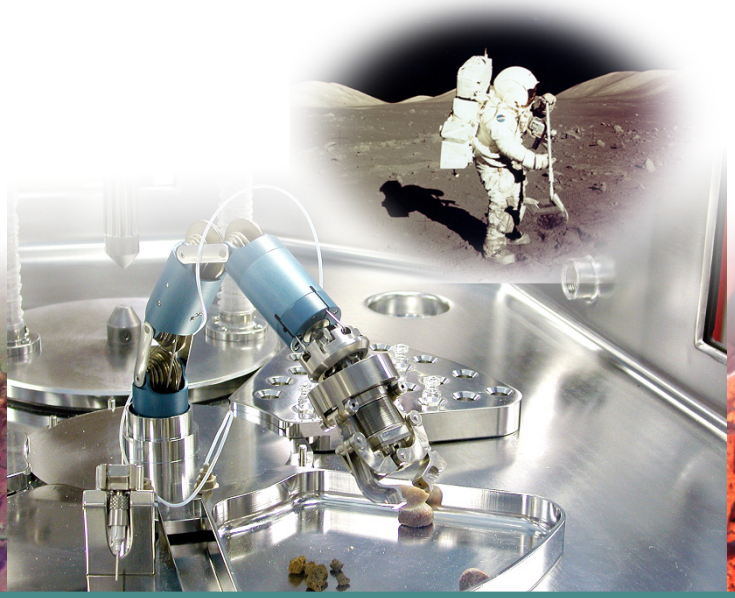
- Apollo Lunar Samples
- Antarctic Meteorites
- Cosmic Dust
- Space-Exposed Hardware

Acquisition and Future Curation

- Stardust
- Genesis
- Muses-C
- New mission proposals

Advanced Curation Research

- Robotic Sample Handling
- Cold Curation
- Planetary Protection



Human Exploration Science

Space Debris

Orbital Debris

- Policy and International Leadership
- Environment Measurement and Modeling
- Mitigation and Environment Control

Hypervelocity Impact Technology

- Risk/Threat Assessments
- Shielding Development
- Impact Testing

Image Science and Analysis

- Static 2D and 3D measurements
- High-Resolution Motion Tracking
- Detailed Surveys and Monitoring of External Vehicle Conditions
- Imagery Screening
- Image Acquisition Planning

Earth Sciences

- Astronaut Training in Earth Photography
- Crew Observations Planning
- Cataloging and Archiving Photographs

Exploration

- Science planning for advanced human exploration missions